

# Fertilizer subsidies in Sub-Saharan Africa

Nicholas Minot  
International Food Policy Research Institute

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## Outline

- Patterns of fertilizer use in Sub-Saharan Africa
- Theory of fertilizer subsidies
- Experiences with fertilizer subsidies
  - 1970s-1995 : Universal fertilizer subsidies
  - 1985-2005 : Fertilizer market liberalization
  - 2005- : Targeted fertilizer subsidies
- Summary

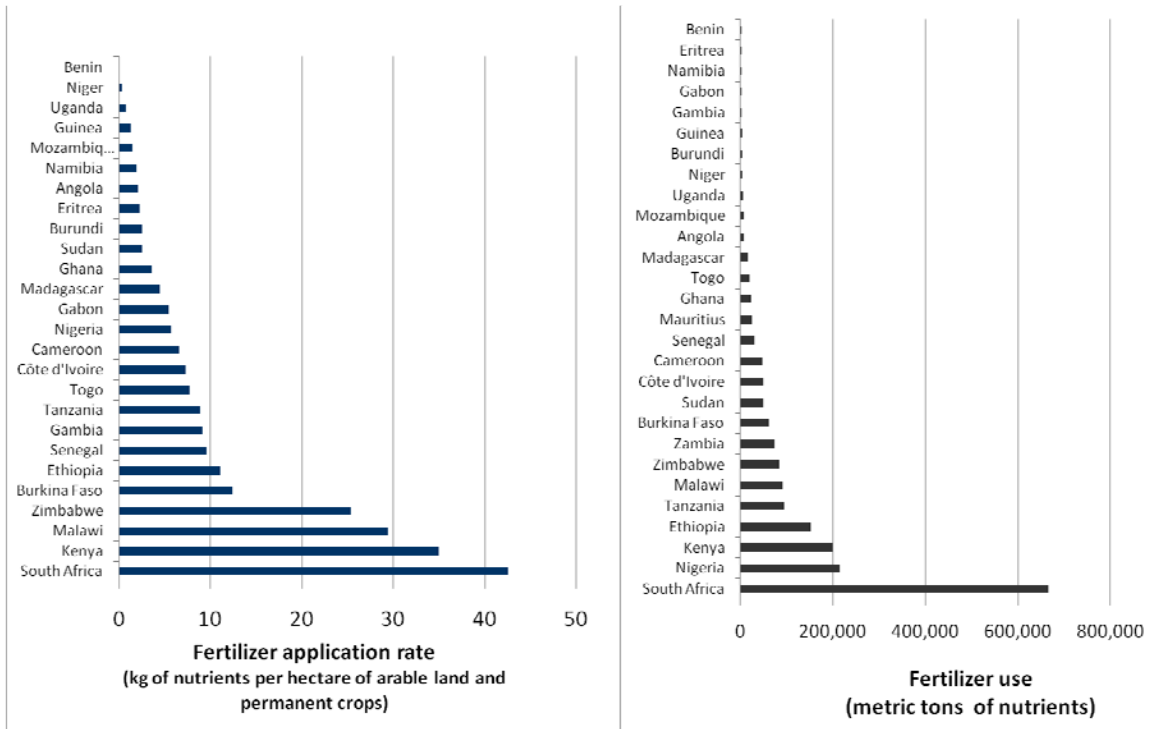
# Patterns of fertilizer use in Africa

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## Fertilizer application rates

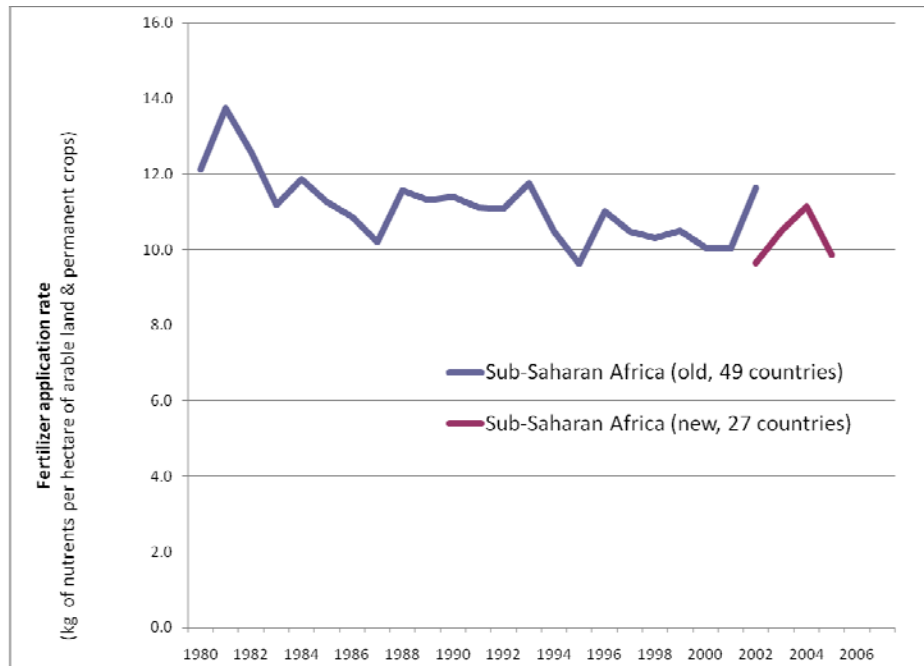
- Overall, 10-12 kg of nutrients per hectare
- Large variation by crop
  - Highest rates on sugarcane, tobacco, cotton, coffee, tea, and vegetables
  - Intermediate rates on maize
  - Close to zero for cassava, yams, sorghum, & millet
- Large variation by country
  - Highest rates in Mauritius, South Africa, & Kenya
  - Lowest rates in high-rainfall and semi-arid countries

### Comparison of fertilizer use in selected African countries in 2005



Source: FAO, 2009. .

### Trends in fertilizer application rates in sub-Saharan Africa



Source: FAO, 2009.

# Theory of fertilizer subsidies

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## Three economic rationales for fertilizer subsidies

### 1. Efficiency

- Fertilizer use by farmers may be sub-optimal because of
  - Lack of information
  - Lack of liquidity
  - Risk aversion
- In this case, subsidy could raise fertilizer use to optimal level
- If so, value of additional crop production could exceed cost of subsidy

## Three economic rationales for fertilizer subsidies

### 2. Equity

- Farm income is below average, so fertilizer subsidies represent transfer to the poor
- To justify, need to show that fertilizer subsidies are better targeted than alternative anti-poverty programs e.g. school feeding, primary health care, & conditional cash transfer
- However, value of transfer proportional to amount of fertilizer used, larger farmers benefit more than small farmers
- Thus, fertilizer subsidies unlikely to be pro-poor unless targeted or rationed

## Three economic rationales for fertilizer subsidies

### 3. Externalities

- Fertilizer subsidies could be justified if fertilizer use generates benefits to others beside the farmers
- Example: fertilizer increases plant growth → reduces soil erosion and run-off → benefits others downstream
- But generally fertilizer subsidies have not been justified for externality reasons

# Experience of fertilizer subsidies:

1970-1995: Subsidies and state control

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## Fertilizer policy over 1970-1995:

Subsidies and state control

- **General pattern**
  - One or more state-owned entity had legal monopoly on importation and distribution of fertilizer.
  - Fertilizer was sold at a subsidized pan-territorial price, 20-60% of full cost
  - Over-valued exchange rate added an implicit subsidy to imported fertilizer
- **Variation across countries**
  - West African countries used cotton parastatals
  - Distribution by cooperative, Min of Ag, & SOEs
  - Some countries had more market-based distribution
    - E.g. Kenya, Zimbabwe,

# Fertilizer policy over 1970-1995: Subsidies and state control

## Problems

- Late delivery of fertilizer
  - Bureaucratic delays & lack of incentives
- Rationing
  - Budget constraints combined with increased demand usually led to rationing
- Displacement of private sector
- High fiscal cost
  - High costs due to overstaffing & lack of cost control
  - Cost more than 3% of government budget in Nigeria, Senegal, Malawi, and Tanzania
  - Affordable during commodity boom of 1970s but not in 1980s

# Experience of fertilizer subsidies: 1985-2005: Subsidy removal and liberalization

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## Fertilizer policy over 1985-2005: Subsidy removal and liberalization

- **Economic crises**
  - Large fiscal deficits & debt → inflation
  - Inflation & fixed exchange rate → forex shortages
  - Countries forced to accept IMF/WB structural adjustment programs in exchange for emergency financial assistance
- **Structural adjustment programs**
  - Market liberalization, privatization, fiscal deficit reduction
  - In fertilizer, universal subsidies phased out
    - Late 1980s, Benin, Ghana, Madagascar, Senegal & Togo
    - Early 1990s, Tanzania, Zambia, Cameroon, Malawi, & Nigeria
  - Market exchange rates eliminated implicit subsidies
  - End of state monopoly on imports & distribution

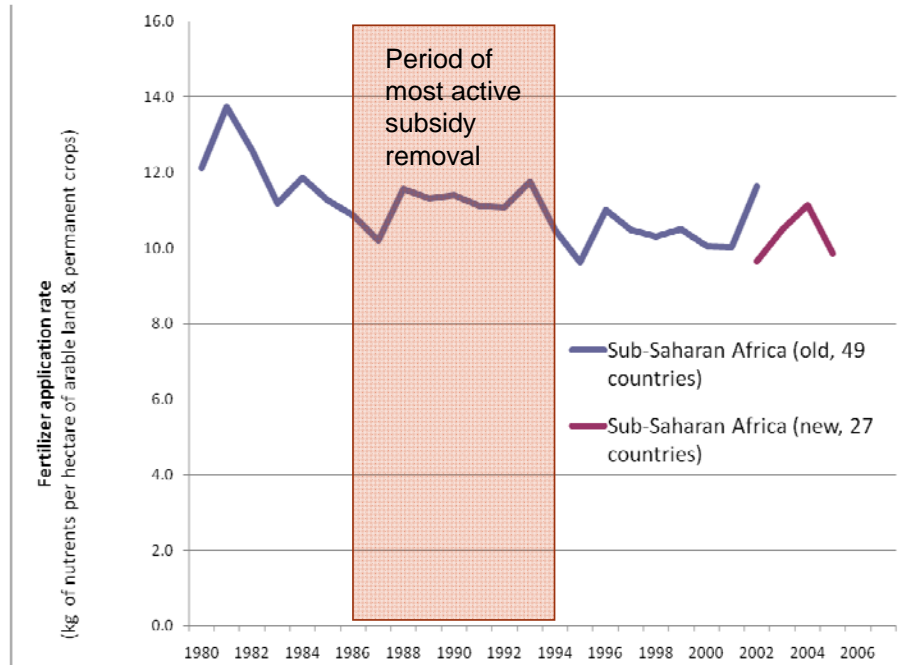
## Fertilizer policy over 1985-2005: Subsidy removal and liberalization

### ...but not all fertilizer markets were fully liberalized

- Nigeria – frequent changes in fertilizer policy and subsidy level
- Malawi – since 1998, a series of fertilizer subsidy programs (discussed later)
- Zambia – Food Reserve Agency distributes subsidized fertilizer in selected areas, private unsubsidized system operates in parallel in other areas
- Ethiopia – Late 1990s, subsidized credit program linked to fertilizer distribution. Cereal price collapse and defaults forced government to scale back program.



## Effect of fertilizer subsidy removal: Africa-wide

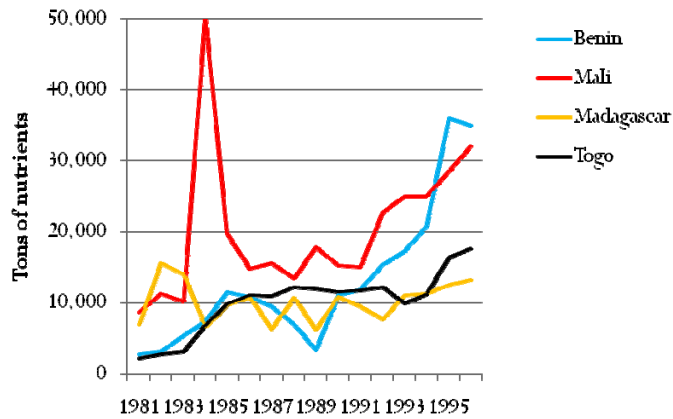


Source: FAO, 2009.

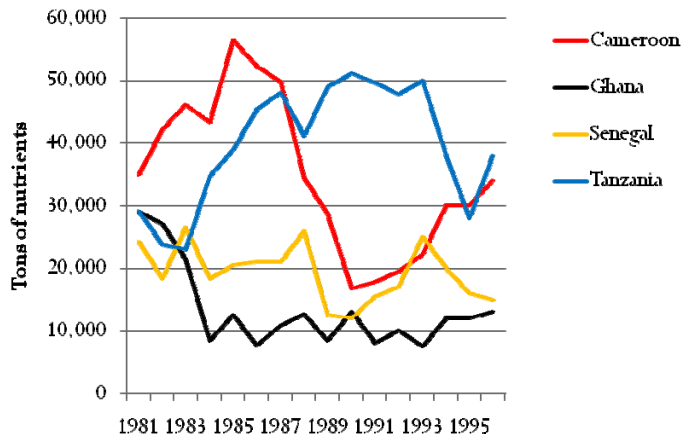
## Effect of fertilizer subsidy removal: specific countries

- Nine countries had distinct periods of phasing out subsidies
- Compare five-year average before and after subsidy elimination
- Result
  - Fertilizer use declined ~40% in two countries: Nigeria & Ghana
  - Fertilizer use declined 25-29% in three: Cameroon, Senegal, & Tanzania
  - Fertilizer use increased 14-500% in Benin, Togo, Mali, & Madagascar
- Explanation
  - Subsidy only one factor in determining price
  - Price only one factor in determining fertilizer use
  - Devaluation increased fertilizer use in cotton-exporting countries

Countries with **rising** fertilizer use during subsidy removal



Countries with **falling** fertilizer use during subsidy removal (Nigeria not shown)



## Fertilizer policy over 1985-2005: Subsidy removal and liberalization

### Fertilizer market development efforts

- After 1995, attention turned from fertilizer subsidies to fertilizer market development
- Elements
  - Training private agro-input dealers
  - Development of professional association and code of conduct
  - Regulatory framework to increase competition & confidence
  - Promotion of new products (smaller packets)
  - Credit programs for dealers to facilitate trade
- Technical assistance
  - IFDC and CNFA with USAID support

# Experience of fertilizer subsidies:

2005-present: Renewed interest in subsidies

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## Renewed interest in fertilizer subsidies

### Factors behind renewed interest

- Jeff Sachs and Millennium Development Villages
  - Demonstrating intensive development assistance including fertilizer subsidy
- Experience of Malawi
  - 2005 Agricultural Input Subsidy Programme (AISP) credited with making Malawi self-sufficient (exporter) of maize
- 2006 Abuja Fertilizer Summit
  - Promote idea of green revolution in Africa and advantages of vouchers as strategy to avoid pitfalls of old subsidies
- Food crisis of 2007-08
  - High price of food and fertilizer focused attention on food production and access to inputs

# Input vouchers

## Definition

- Certificate which entitles farmer to buy inputs at subsidized price. The input vendor can redeem voucher for cash from government.

## Potential advantages

- Compatible with private-sector distribution of inputs so it will promote development of private distribution network rather than undercut it
- Facilitates targeting of input subsidy
- May reduce costs compared to government input distribution
- *Seen as way to stimulate fertilizer use without pitfalls of subsidies of 1970s and 1980s*

# Input vouchers

## Not the same as a smart subsidy.

- Smart subsidy or “market-smart subsidy” - Subsidy which combines targeting to poor and/or uses private sector for distribution

## Relation between vouchers and smart subsidies

- Smart subsidies usually use vouchers so that subsidized good can be delivered through private distributors
- Vouchers may or may not be a “smart subsidy”
  - Vouchers are not necessarily targeted
  - Vouchers do not necessarily allow private-sector distribution

# Input vouchers - Malawi

## Evolution of fertilizer policy

- Mid-1990s – Universal fertilizer subsidies phased out
- 1998-99 – Starter Pack (SP)
  - Free small packs of fertilizer and seed to all farmers
  - 10-40% of fertilizer subsidized
- 2000-04 – Targeted Input Programme (TIP)
  - Attempts to target subsidized inputs to poor
  - Vouchers used but redeemable at ADMARC & SFFRRM
  - 10-20% of fertilizer subsidized
- 2005-now – Agricultural Input Subsidy Programme (AISP)
  - Farmers can buy 100 kg fertilizer at 20% of cost
  - Voucher based but role of private retailers declines
  - Half of fertilizer subsidized

# Input vouchers - Malawi

## Strengths of AISP

- Large-scale
- Combined with good weather, created maize self-sufficiency and exports to Zimbabwe
- Detailed monitoring and evaluation

## Weaknesses of AISP

- Private retailers largely excluded from program, so AISP undermines private retailers, private share from 80% to 55%
- High cost – US\$ 91 million or 5% of national budget
- Late or unpredictable delivery of fertilizer
- Confusion about eligibility of retailers and farmers

# Input vouchers – Other African countries

## Tanzania

- In 2008, adopted voucher-based subsidy program
- All sales through private retailers, easy redemption
- Market development activities
- Large (1.5 m beneficiaries), US\$ 100-150 million

## Ghana

- In 2008, launched voucher-based subsidy program (US\$15m)
- Vouchers redeemable by fertilizer importers, so independent dealers excluded from program
- Started too late to benefit south

## Kenya

- More limited voucher program started in 2006
- Targeted to poor and vulnerable

# Conclusions

## Universal subsidies of 1970s and 1980s

- Conventional wisdom: costly and inefficient but they stimulated fertilizer use and crop production
- However, evidence that they stimulated fertilizer use is mixed

## Input vouchers – do they avoid problems of universal subsidies?

- Can vouchers promote private distribution network?
  - Yes but only if well designed
  - Malawi no, Ghana somewhat, Tanzania probably
- Can vouchers be targeted to poor?
  - In Malawi, targeting poor households has been difficult
- Are voucher systems vulnerable to delays in delivery?
  - Less likely but it has happened (Ghana 2008, Malawi 2003)
- Are vouchers a good investment?
  - Need more evidence, Malawi BC ratio was 0.76 – 1.36

# Conclusions

## Input vouchers – lessons

- Vouchers must be widely redeemable
- Funding must be provided early
- Features of design must be transparent and communicated
- Voucher program should be complemented with fertilizer market development activities
- Voucher program is no substitute for agricultural research, roads, conducive investment environment, and consistent agricultural policy
- Tanzania NAIVS is most promising model but questions remain
  - What is benefit-cost ratio?
  - Is it fiscally sustainable?